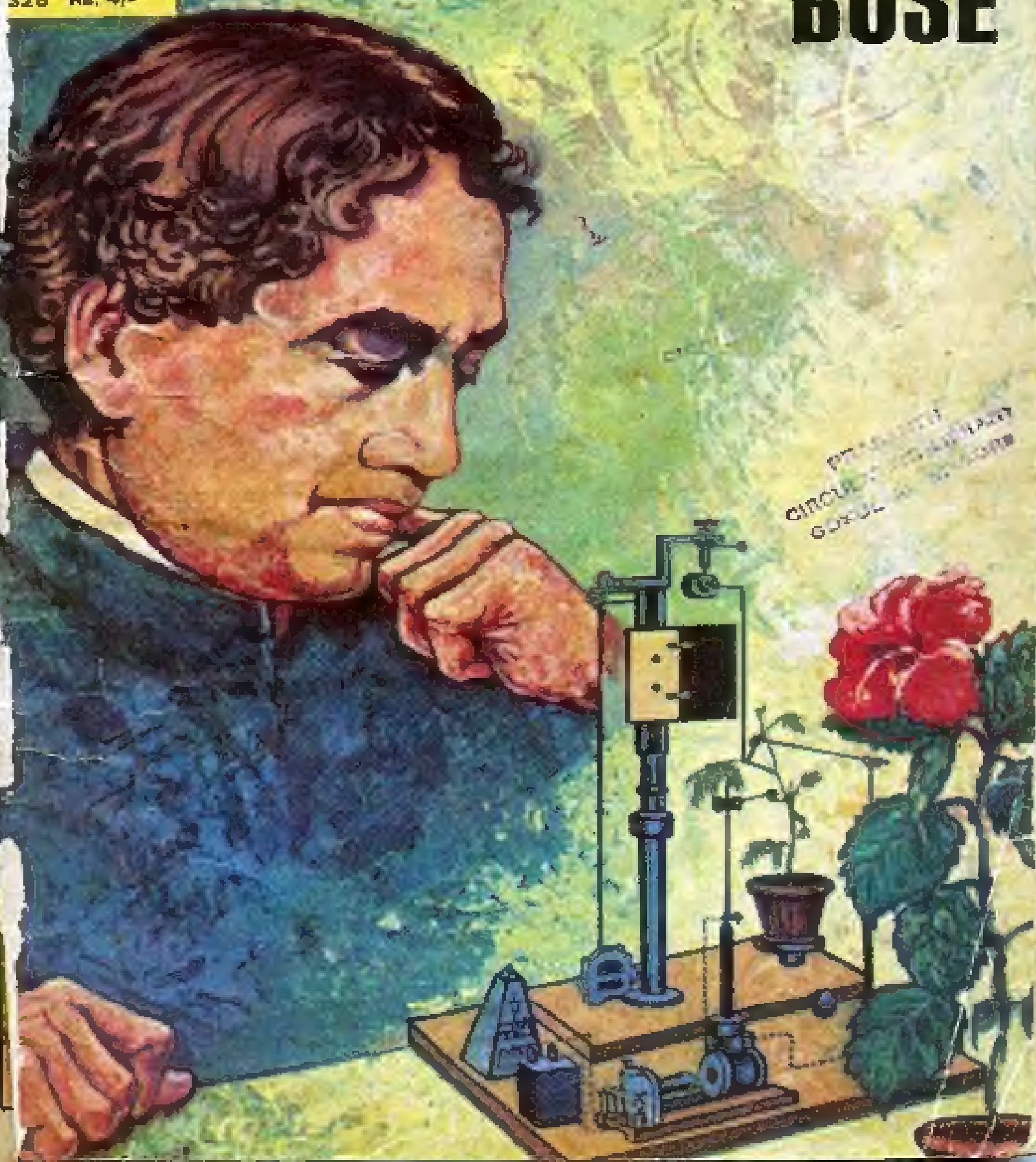




325 Rs. 4/-

JAGADIS CHANDRA BOSE



PRESENTED BY
CIRCULAR LIBRARY
GOVT. OF INDIA

Amar Chitra Katha

No. 325 January 1, 1985

Editor

ANANT PAI

Associate Editors

KAMALA CHANDRAKANT

SUBBA RAO

Script

G. R. KAMATH

LUIS M. FERNANDES

Science Consultant

Dr. VENUGOPAL

Artworks

SUREN ROY

Art Consultant

RAM WAEERKAR

Production

GOVIND KOTWANI

Published by:

H. G. MIRCHANDANI

for IBH Publishers Pvt. Ltd.,

Mahalaxmi Chambers,

22, Bhulabhai Desai Road,

Bombay 400 026 and printed by him

at IBH Printers, Marol Naka,

Madhuradas Vissanji Road,

Andheri (East), Bombay 400 059.

© IBH Publishers Pvt. Ltd.,

Bombay 400 026.

All rights reserved 1984

Distributors in U. S. A.

Admans Enterprises Inc.

7123 Broadway Suite 1010

New York N.Y. 10010

Subscription: (In India only)

Rs. 42/- for 12 issues and Rs. 86/-

for 24 issues. (Add Rs. 5/-

for outstation cheque).

Sole Authorised Agency for

Subscriptions: Partha Books Division,

Nav Prabhat Chambers,

Ranade Road, Dadar,

Bombay 400 028.

When you buy a

Chitra Katha

make sure it is



Jagadis Chandra Bose

Jagadis Chandra Bose (1858-1937) was the first Indian scientist in modern times to have won international recognition. Gifted with a mind that was at once inquisitive and discerning, Bose wondered about the how and why of things from a very young age.

All along, he kept himself abreast of scientific and technological developments in the west. With Marconi—who at about the same time worked independently halfway across the globe—he laid the foundations of radio broadcasting.

Though he began with experimental physics, his innate interest in living beings veered him towards the science of biophysics. He invented extremely sensitive instruments that could detect and measure the responses of living organisms to external stimuli.

However a verdict on the validity of much of his pioneering work in Biophysics will have to wait. For, as the 1945 edition of 'Encyclopaedia Britannica' wrote: "His work was so much in advance of his time that its precise evaluation was not possible."

OUR NEXT RELEASE ON

January 15, 1985

Tales of Avvaiyaar

Over 320 titles
now on sale.

JAGADIS CHANDRA BOSE



1862, PASADENA: A BOY OF FOUR LOOKED UP AT THE SKY...

...AND TURNED TO HIS FATHER.

BABA, I SAW SO MANY STARS IN THE SKY LAST NIGHT. BUT NOW THEY ARE GONE.



WHERE HAVE THEY GONE, BABA?



THEY HAVEN'T GONE ANYWHERE, SON. WE CANNOT SEE THEM BECAUSE THE SUN'S LIGHT IS BRIGHTER.



BABA, WHY ARE PLANTS ALL GREEN? BIRDS AND ANIMALS HAVE SO MANY COLOURS.

TO TELL YOU THE TRUTH, I DON'T KNOW.



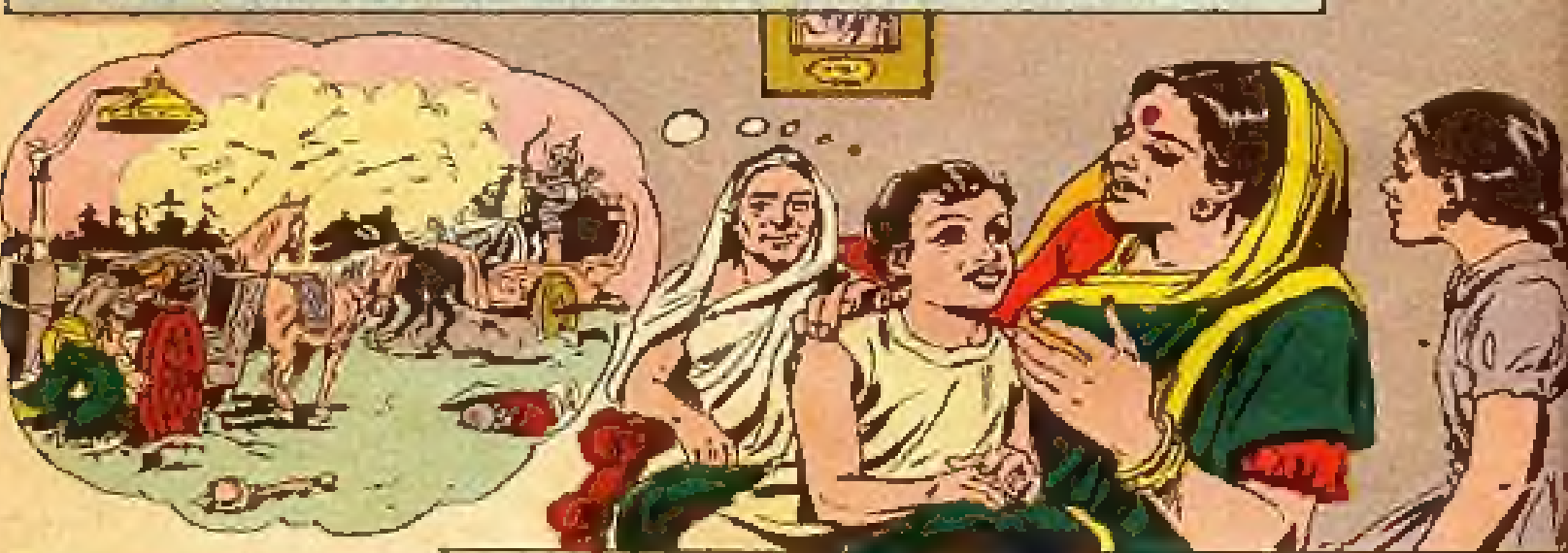
WHEN YOU GROW OLDER TRY TO FIND OUT WHY.

THE BOY WHO ASKED QUESTIONS WAS JAGADIS CHANDRA BOSE WHO LATER BECAME THE FIRST INDIAN IN MODERN TIMES TO WIN INTERNATIONAL ACCLAIM AS A SCIENTIST.

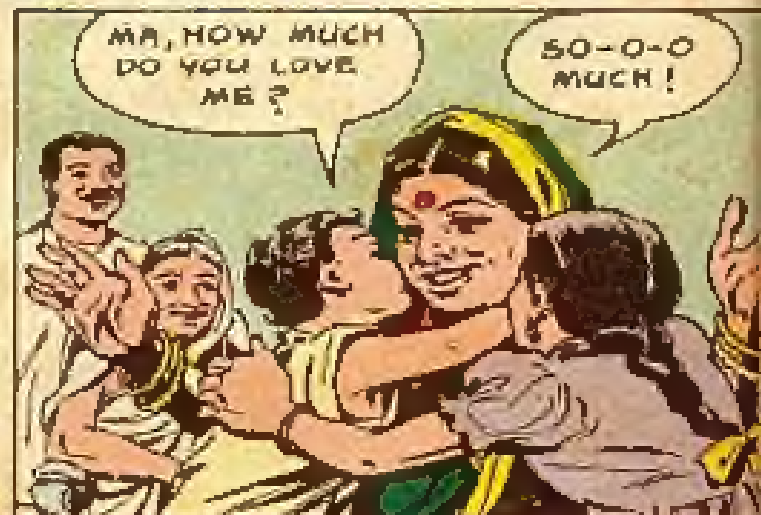
JAGADIS'S MOTHER, BAMASUNDARI, WAS A TRADITIONAL HINDU WIFE AND A LOVING BUT STRICT MOTHER.



JAGADIS LIKED TO LISTEN TO THE STORY OF KARNA AGAIN AND AGAIN.



WHEN THE STORY-TELLING WAS OVER, BAMASUNDARI ASKED HIM THE USUAL QUESTION.



JAGADIS WAS THE PET OF THE BOSE HOUSEHOLD AND HE KNEW IT.

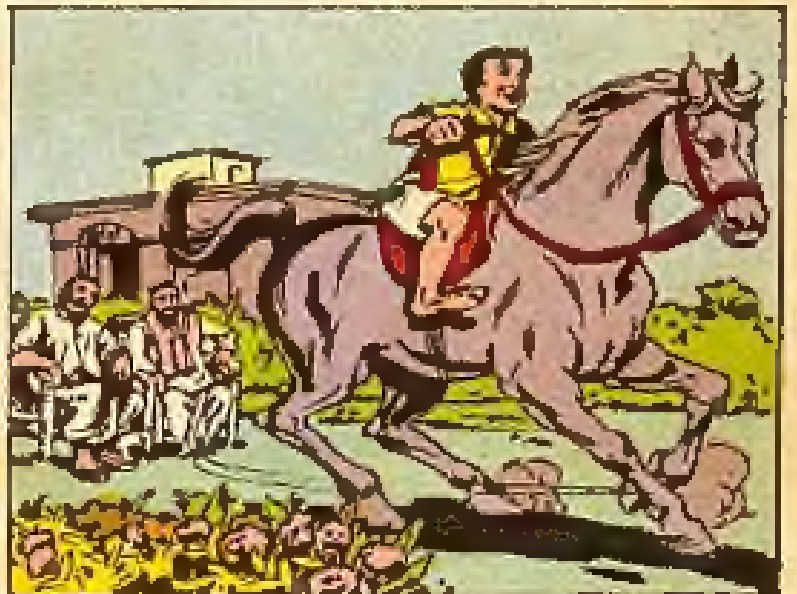
JAGADIS' FATHER, BHAGWAN CHANDRA BOSE, WAS THE DEPUTY MAGISTRATE OF FARIDPUR. HE WAS A GREAT LOVER OF SPORT.

NOW ISN'T THAT
A TOUGH JOB FOR
A FIVE-YEAR-
OLD? WHY DO
YOU LET HIM
DO IT?

A LITTLE STRENUOUS
EXERCISE IS GOOD FOR
A GROWING BOY'S LIMBS.



LOOK! HE'S
MOUNTING THE
PONY! HE'LL FALL
OFF!



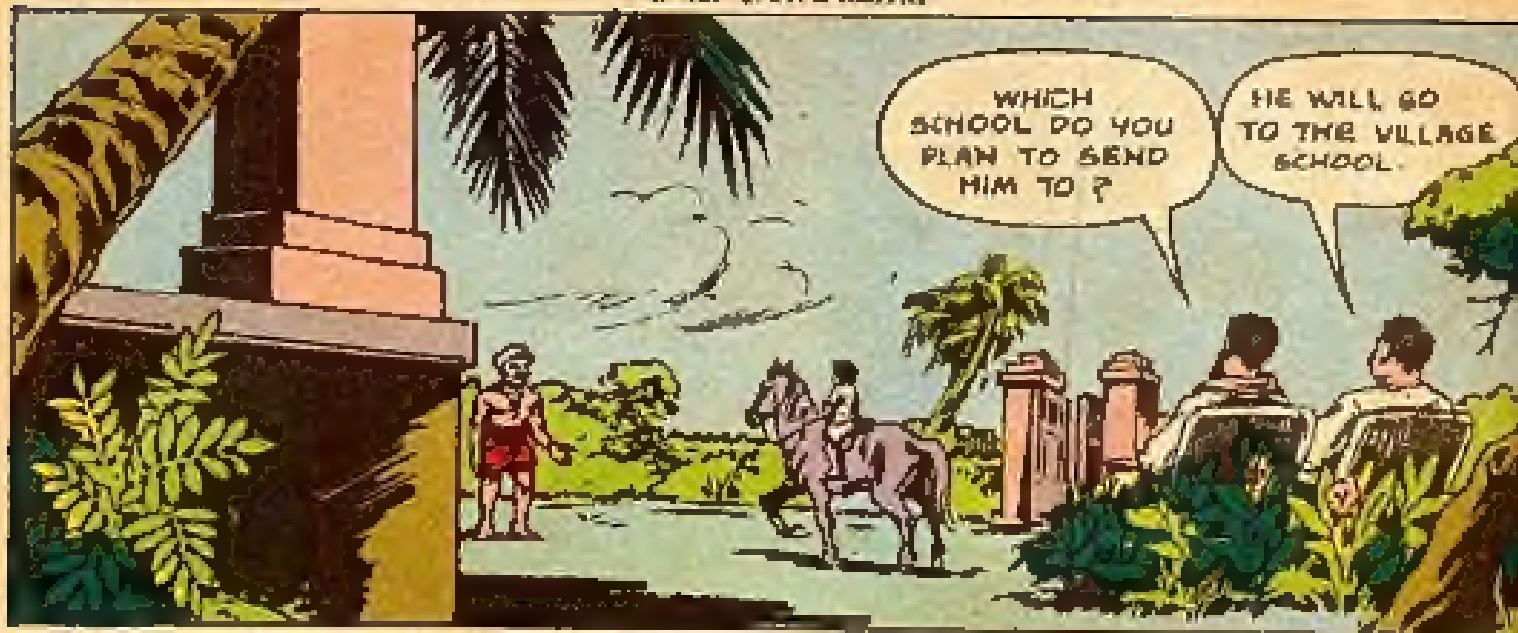
YOUR SON, IS
SMART... JUST LIKE
AN ENGLISH BOY!



BHAGWAN CHANDRA GENTLY CORRECTED
HIS FRIEND.

HE IS SMART LIKE
ANY OTHER
INDIAN BOY.





WHICH SCHOOL DO YOU PLAN TO SEND HIM TO ?

HE WILL GO TO THE VILLAGE SCHOOL.



THE SCHOOL YOU FOUNDED ? BUT... BUT THAT'S FOR... YOU CAN'T BE SERIOUS!

I AM!



IT WAS THOUGHTFUL OF YOU TO START A BENGALI SCHOOL FOR THE LOCALS.



BUT, SURELY, THE SON OF OUR DEPUTY MAGISTRATE DESERVES TO GO TO AN ENGLISH SCHOOL.

I BEG YOUR PARDON. A SCHOOL WHICH TEACHES IN HIS MOTHER-TONGUE IS THE BEST ONE FOR HIM.



WHILE OTHER CHILDREN WERE CONTENT WITH SCHOOL WORK, JAGADIS, EVER CURIOUS ABOUT NATURE, WAS ALWAYS RUNNING OFF TO GAZE AT THE FIELDS, THE WOODS, THE RIVER.



IS THE PLANT GREEN ALL THROUGH?



OH! IT'S GREEN ONLY TILL THE ROOTS THEN IT STOPS BEING GREEN. I WONDER WHY.



WHAT A BEAUTIFUL CREATURE! I'LL CATCH IT FOR THE POND IN MY GARDEN.



SOON —

JAGADIS WHERE HAVE YOU... E-E-E-E-K!

I CAUGHT IT.



IT'LL BITE YOU. IT'S POISONOUS.

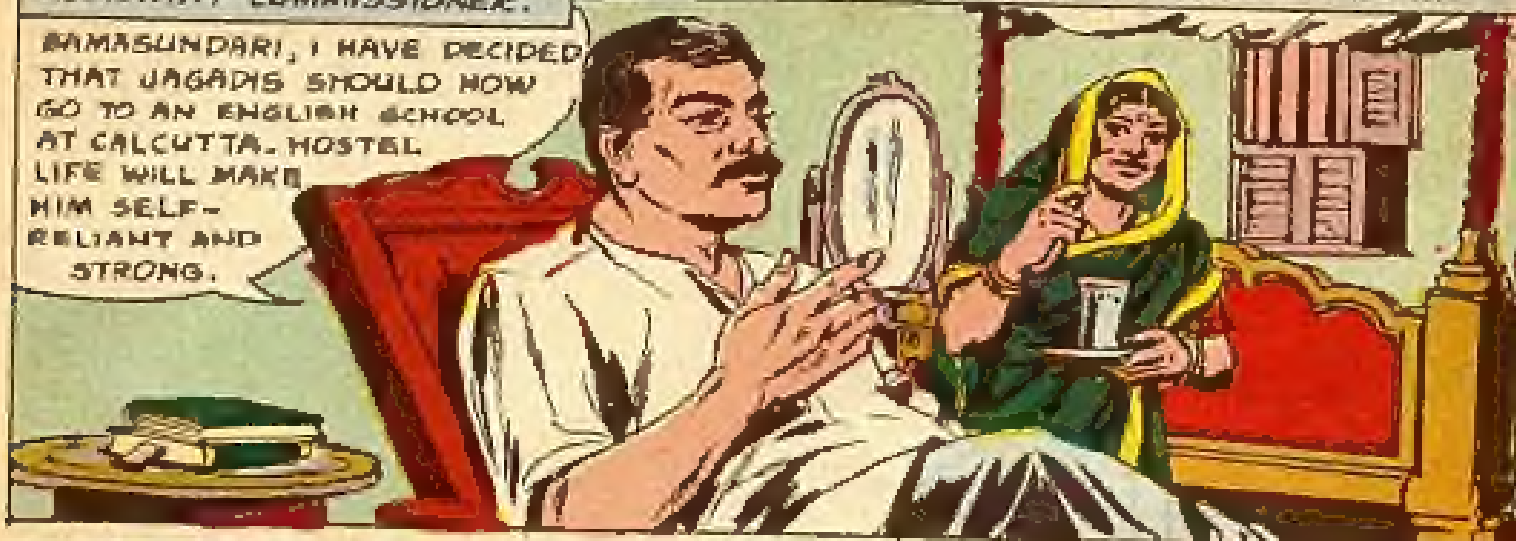
IT ISN'T! THAT'S WHY IT'S MY PET NOW!



THROUGHOUT HIS LIFE JAGADIS LOVED ANIMALS AND BIRDS. TILL HE WENT UP TO COLLEGE HIS PETS RANGED FROM SNAKES AND FROGS TO SHEEP!

WHEN JAGADIS WAS TEN, HIS FATHER WAS TRANSFERRED TO BURDWAN AS AN ASSISTANT COMMISSIONER.

BAMASUNDARI, I HAVE DECIDED THAT JAGADIS SHOULD NOW GO TO AN ENGLISH SCHOOL AT CALCUTTA. HOSTEL LIFE WILL MAKE HIM SELF-RELIANT AND STRONG.



THE CHANGE FROM THE COSY WARMTH OF HIS TRADITIONAL INDIAN HOME TO A HOSTEL OF BLUNT, ROISTEROUS STUDENTS MADE JAGADIS MISERABLE AND HOME SICK.



THE FIRST FEW DAYS AT SCHOOL WERE PARTICULARLY BAD FOR THE SENSITIVE BOY. HE DID NOT KNOW WESTERN MANNERS AND HE COULD BARELY SPEAK ENGLISH.







OVER THE NEXT FEW WEEKS HE MADE A GARDEN IN THE HOSTEL, COLLECTED A FEW PETS AND SOON BEGAN TO ENJOY SCHOOL AND HOSTEL LIFE.



4. 在下列各数中，找出与 100 最接近的数，并说明理由。

1970年 5月 14日
 1970年 5月 14日



THE UNIVERSITY OF CHICAGO
LIBRARY



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

Figure 1



1948年 7月 1日

THE UNIVERSITY OF
ALABAMA
LIBRARY



JAGADIS STARTED SPENDING MOST OF HIS

THE UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS 60637
U.S.A.

YOU HAVE TO
HOLD THE SMALL
PINKY AND THEN
THE MIDDLE LINE
THUMB

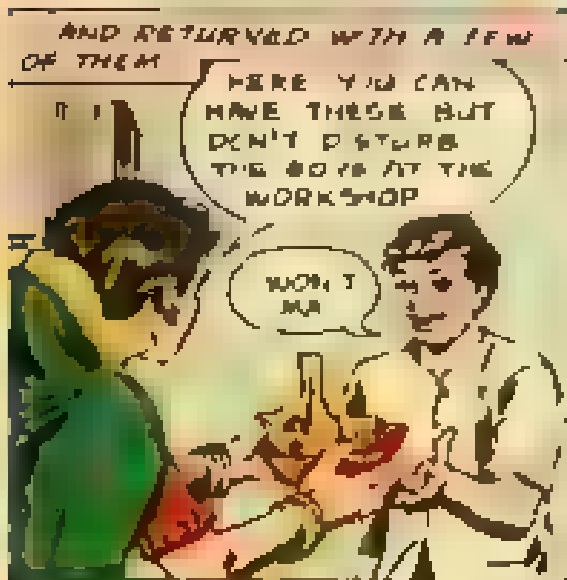
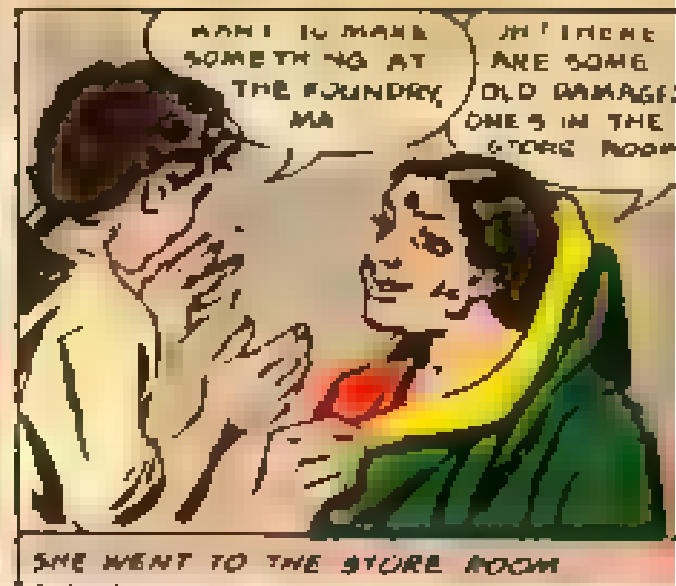


BUT WHAT FASCINATED HIM MOST WAS

ARE YOU SURE IT WAS
METAL IN THAT
FLAMING CUP

ANY METAL,
LEADS BACK



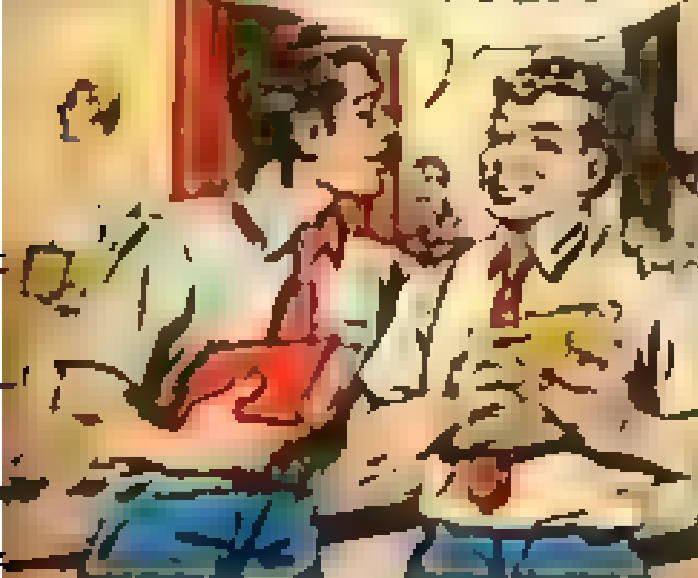
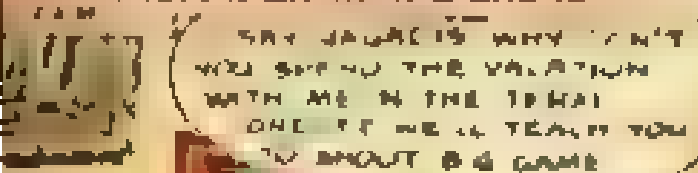


SADE ENANT! WHOY AT ASTRON AND JOINED BY 17. AND COLLEGE
THERE HE FELL UNDER HE SPELL OF FR LAFONT THE RECTOR OF THE COLLEGE
AND THE BEST PROFESSOR OF PHYSICS IN INDIA IN THOSE DAYS



FR. LAFONT ON HIS PART SAW GREAT
PROMISE IN HIS STUDENT AND
ENCOURAGED HIM IN THE STUDY OF
PHYSICS

THREE DELIGHTFUL YEARS OF COLLEGE
FLEW PAST. THEN AT THE END OF



JAGADIS ACCEPTED THE INVITATION
AND CAME BACK AN EXPERT IN
BIG GAME HUNTING AND WITH A
HORN IN 3000 FT. B. 120'

* ABOUT 34 KM

WHEN THE NEXT VACATION CAME ROUND,
ANOTHER FRIEND INVITED HIM, TO ASSAM
THIS TIME, FOR THE SAME SPORT.



ALIGHTING AT THE ASSAM RAILWAY STATION HE HAD TO TRAVEL OVERNIGHT BY PALANQUIN TO REACH HIS FRIEND'S HOUSE

OH! SAND-FLIES HERE TOO! WHAT A nuisance!



AS SOON AS HE REACHED, HE AND HIS FRIEND LEFT FOR THE FORESTS AND SPENT THE WHOLE DAY THERE



THAT EVEN NO

WHAT'S THE MATTER, ROSE? YOU LOOK PALE

I'M NOT FEELING TOO WELL. I MUST SEE A DOCTOR.



BUT THERE ISN'T ONE IN MILES

THEN I MUST GET BACK TO CALCUTTA BEFORE I GET WORSE. I MUST LEAVE NOW



BUT YOU CAN'T GET A PALANQUIN TILL TOMORROW

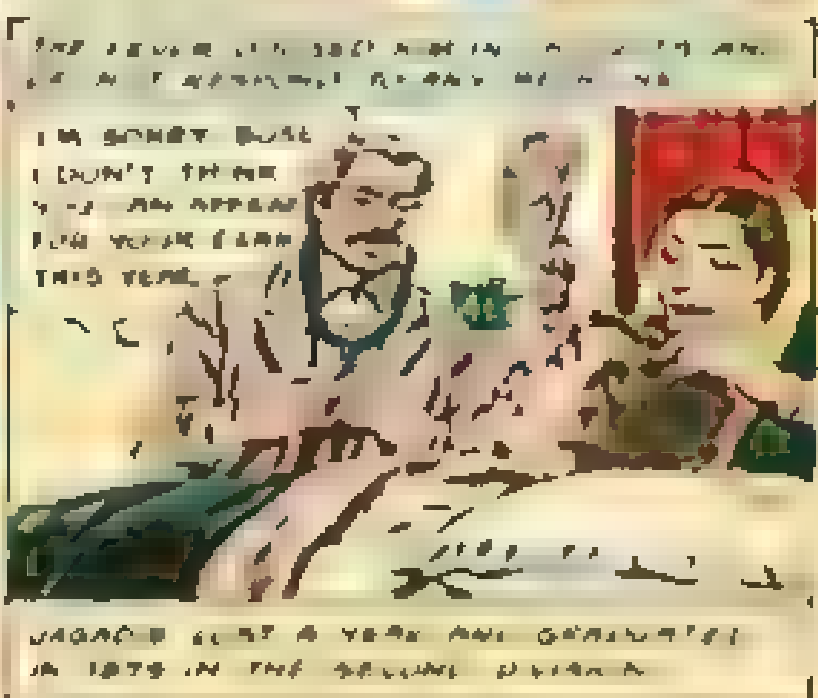
I'LL RIDE TO THE STATION



I'VE SENT AWAY THE HORSES WE USED THE ONLY ONE HERE IS A WILD, VICIOUS CREATURE!

THAT'S ALL RIGHT I'VE RIDDEN HORSES EVER SINCE I WAS FIVE. BRING HIM ON.





JAGADE LEFT A YEAR AND GRADUATED IN 1979 IN THE TECHNICAL DIVISION

HE RETURNED HOME WITH PLANS TO GO ABROAD FOR FURTHER STUDIES.

FATHER, I WOULD LIKE TO GO TO ENGLAND AND TRY FOR THE I.C.S.

TO BECOME AN ADMIN-STRATOR?

TO BECOME A CIVIL SERVANT AND SERVE THE BRITISH GOVERNMENT?

NO SON, WOULD RATHER YOU STAYED SOMETHING LIKE ASS-CULTURAL & ENDS THEN YOU COULD TRULY SERVE OUR COUNTRYMEN

HE JOINED THE UNIVERSITY OF LONDON AND MADE A GOOD START. THEN ONE DAY IN THE ANATOMY ROOM -

HEY WHAT'S THE MATTER WITH BOSE?

VASARIS FINALLY DECIDED TO STUDY MEDICINE AND LEFT FOR ENGLAND IN 1900

WHAT'S WRONG BOSE?

IT'S THE ODOUR HERE. I FEEL SICK

DID YOU BE BURNING WITH FEVER

LET'S TAKE HIM TO HIS ROOMS

IT WAS AN ATTACK OF THAT UNIDENTIFIED FEVER. AFTER A FEW DAYS REST HE FEEL BETTER.

THE FEVER RETURNED AGAIN AND AGAIN UNTIL IT BECAME SO COMMON TO HIM THAT IT NEVER RECURRED. AT LAST

HE DECIDED TO SURRENDER BUT I'M AFRAID YOU'LL HAVE TO GIVE UP THE STUDY OF MEDICINE. YOU ARE ALLERGIC TO THE ODORS OF THE ANATOMY



SO BOGG GAVE UP MEDICINE AND TOOK UP THE NATURAL SCIENCE COURSE AT CAMBRIDGE. HIS PHYSICS FELLOW THERE WAS LORD KELVIN A LEADING SCIENTIST OF THE TIMES

HE WAS FASCINATED BY THE WAY OF ENERGY AND MATTER AND THEIR INTERACTION AND PROPERLY BOGG MAKES IT ALL SOUND SO SIMPLE AND CLEAR



HE HAS THE SAME APPROACH TO THE SUBJECT AS PASCAL



AT CAMBRIDGE HIS FEVER VANISHED AND NEVER AGAIN TROUBLED HIM

HE TOOK HIS DEGREE (TRIPLOS) IN THE NATURAL SCIENCES IN 1884 WITH PHYSICS, CHEMISTRY AND BOTANY...



AND SIMULTANEOUSLY TOOK A B SC DEGREE FROM THE UNIVERSITY OF LONDON AS IT DID NOT REQUIRE ANY EXTRA WORK

HE RETURNED TO INDIA AND FOUND THAT HIS FATHER HAD MADE SOME MISCALCULATIONS AND RUN UP HUGE DEBTS.

IN 1885, BOSE SECURED THE POST OF PROFESSOR OF PHYSICS AT PREMDENY COLLEGE IN CALCUTTA



I MUST SEEK SOME EMPLOYMENT AND HELP FATHER OUT

BUT SOMETHING HE DISCOVERED ONLY LATER MADE HIM VERY UNHAPPY

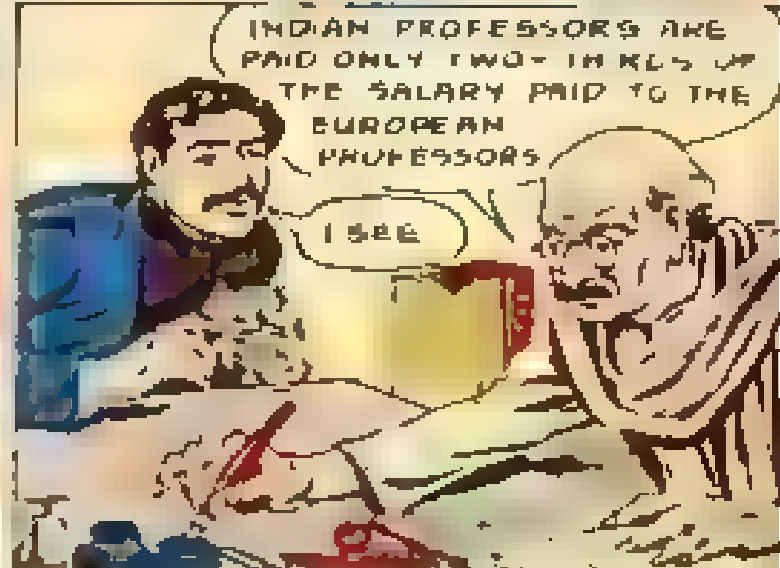
HAVEN'T YOU MADE A MISTAKE?

NO, BABU, I HAVEN'T



INDIAN PROFESSORS ARE PAID ONLY TWO-THIRDS OF THE SALARY PAID TO THE EUROPEAN PROFESSORS

I SEE

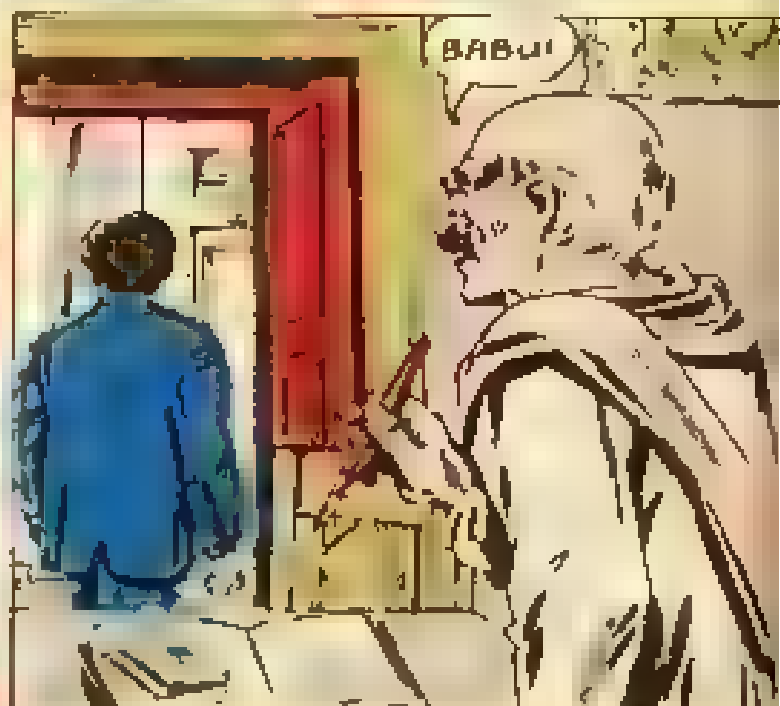


BABU, PLEASE SIGN HERE

IT WON'T BE NECESSARY I'M NOT ACCEPTING MY SALARY



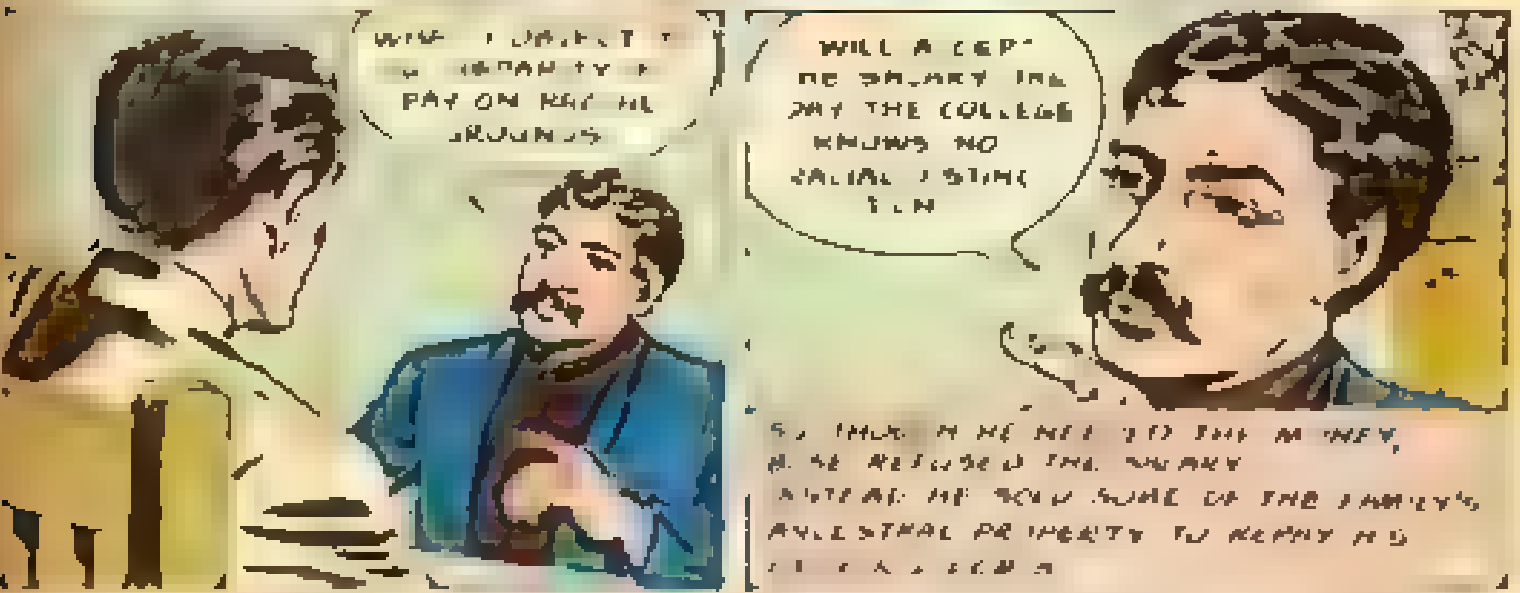
BABU!





IT'S A MATTER OF HONOUR TO TEACH AT THIS COLLEGE SO I TEACH

IT'S A MATTER OF HONOUR TO TEACH AT THIS COLLEGE SO I TEACH



WILL A CEF' BE SHARY THE DAY THE COLLEGE KNOWS NO SALIAL 15TH 15N

WILL A CEF' BE SHARY THE DAY THE COLLEGE KNOWS NO SALIAL 15TH 15N

SO THAT HE NEED TO THE MONEY, HE REFUSED THE MARY. INSTEAD HE SOLD SOME OF THE FAMILY'S ANCESTRAL PROPERTY TO REPLY HIS



THE MAN STAYED WITH ME UP TO THE 20TH YEAR AND IS INTERESTED IN A GALE SHE A WARE AN EXCELLENT WIFE AND COMPANION FOR BUSG

THIS PREDICTION PROVED TO BE VERY TRUE

MEANWHILE BOSE WAS GETTING TO BE POPULAR WITH THE STUDENTS

COME ON LET'S HURRY IT'S PROF. BOSE'S CLASS WE WON'T BE ABLE TO GET IN THE FIRST ROW IF WE ARE LATE



THOUGH IT TOOK THREE YEARS BOSE'S PROTEST FINALLY MADE ITS IMPACT AND A COMMON PAY SCALE WAS INTRODUCED

BOSE! YOU HAVE WON! CONGRATULATIONS

THANK YOU



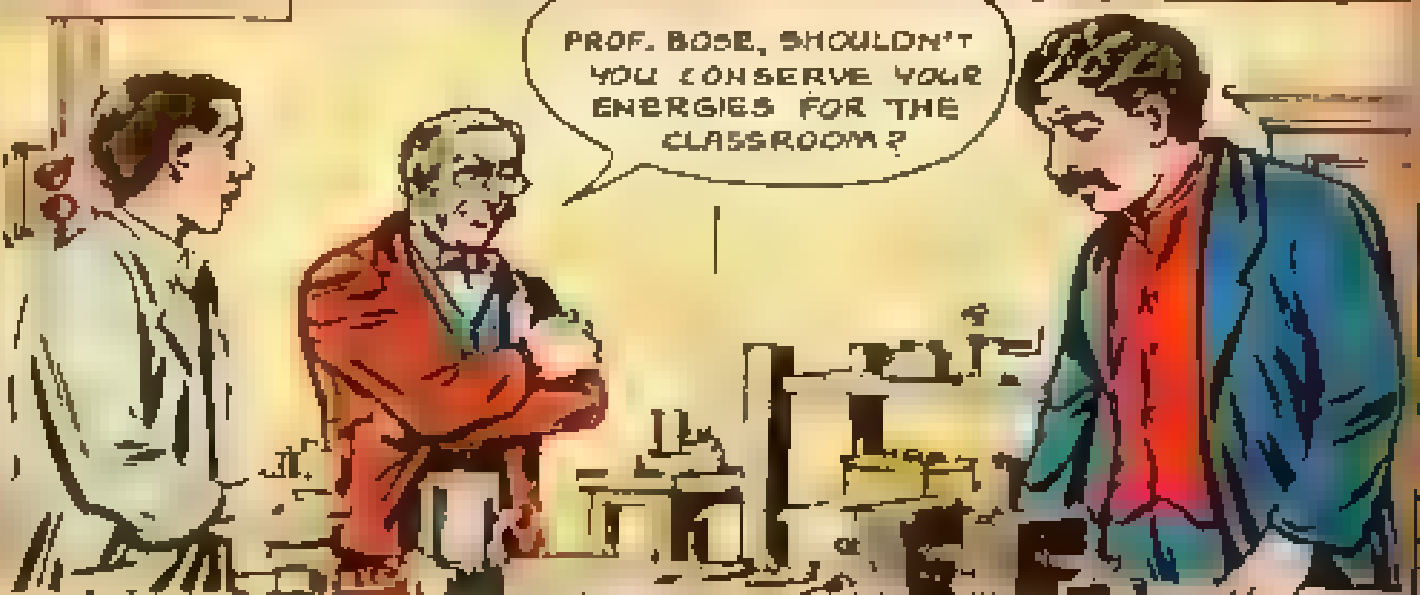
BOSE WAS GIVEN THE REVISED SCALE OF PAY WITH RETROSPECTIVE EFFECT.

IN THE NEXT FEW YEARS, BOSE SPENT MUCH OF HIS SPARE TIME IN THE COLLEGE LABORATORY. USING HIS OWN MONEY AND USING HIS FINE ENGINEERING SKILL HE MADE MANY OF THE INSTRUMENTS HE NEEDED



INSTEAD OF APPRECIATING HIS WORK THE COLLEGE AUTHORITIES FELT HE WAS WASTING HIS TIME

PROF. BOSE, SHOULDN'T YOU CONSERVE YOUR ENERGIES FOR THE CLASSROOM?

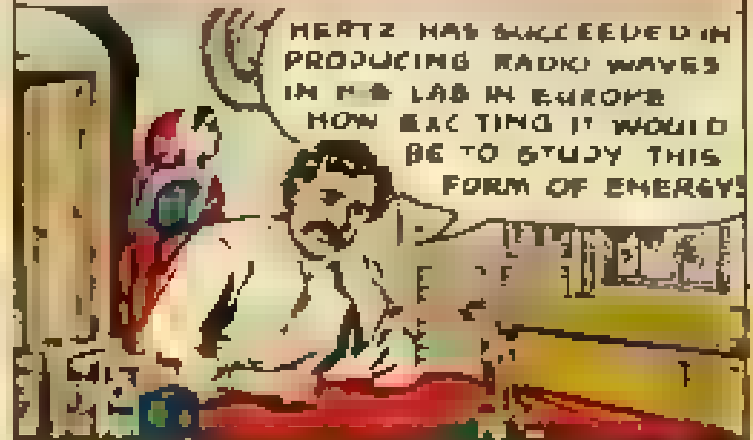


THIS ATTITUDE POWERED BOSE

IF ONLY WE
HAD AN IN-
DEPENDENT
INSTITUTE OF
SCIENCE, WHERE
ONE COULD WORK
WITH A FREE
MIND, IF ONLY.



AT HOME HOWEVER IT WAS DIFFERENT.
ABALA TOOK A KEEN INTEREST IN HIS
RESEARCH WORK AND ACTIVELY
ENCOURAGED HIM WHEN HE FELT LOW.



HERTZ HAS SUCCEEDED IN
PRODUCING RADIO WAVES
IN HIS LAB IN EUROPE
HOW EXACTING IT WOULD
BE TO STUDY THIS
FORM OF ENERGY?

THE WORLD TODAY
KNOWS SO LITTLE
ABOUT THE
PROPERTIES OF
THOSE WAVES



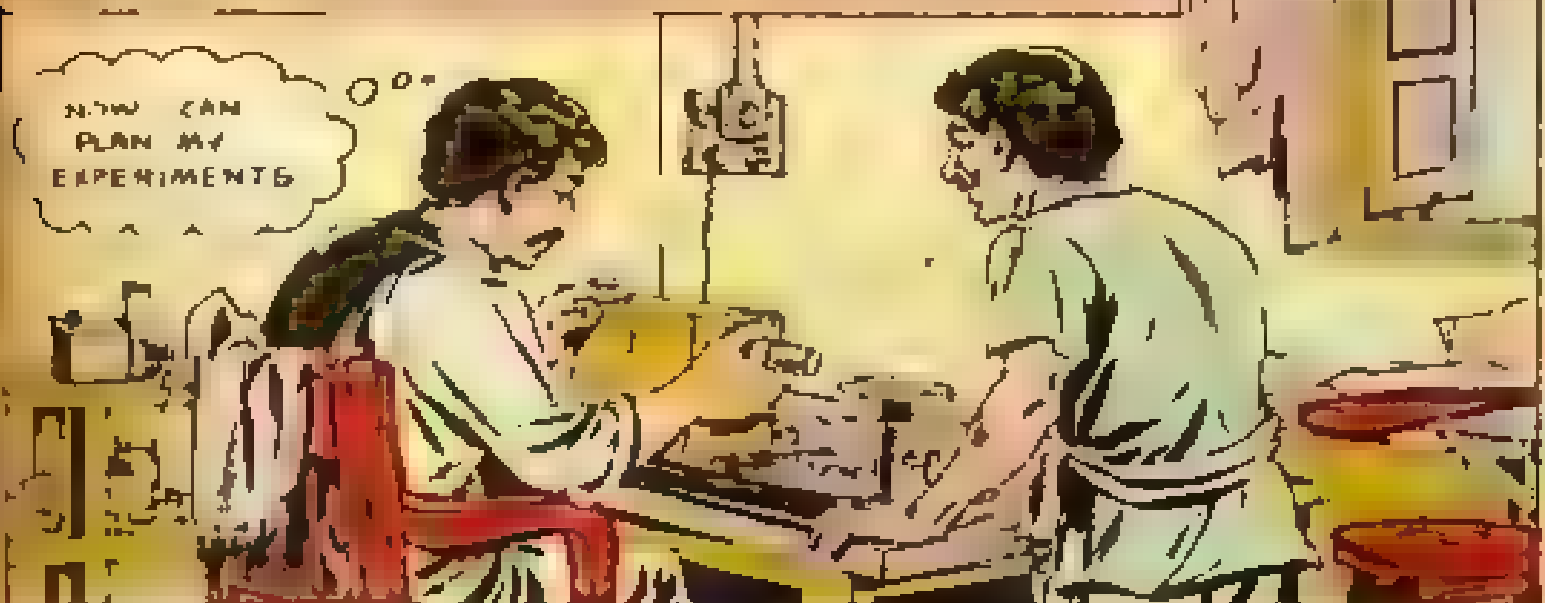
WHY DON'T YOU
MAKE AN INSTRUMENT
LIKE HERTZ'S AND
STUDY THESE WAVES
IN YOUR LAB HERE
IN INDIA?



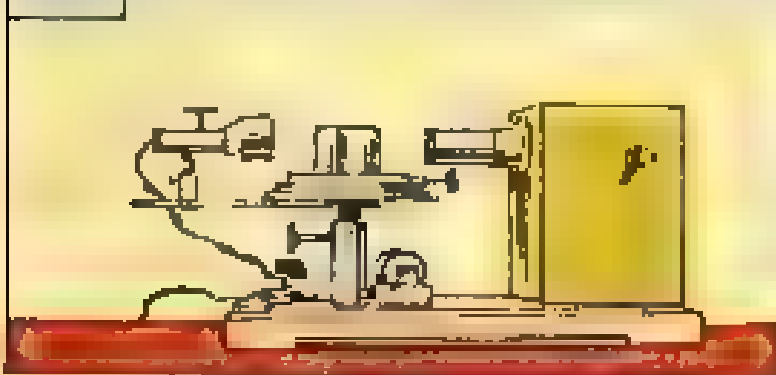
THE SUGGESTION APPEARED TO BOSE,
AND HE IMMEDIATELY STARTED WORK
ON THE PROJECT.

WITH HIS OWN ENGINEERING SKILL AND THE ASSISTANCE OF A TIN-SMITH HE HAD
TRAFFED, HE FINALLY SUCCEEDED IN MAKING THE EQUIPMENT

NOW CAN
PLAN MY
EXPERIMENTS



BOSE'S EQUIPMENT WAS A SCIENTIFIC MARVEL. THE COMPACT APPARATUS WAS MUCH SUPERIOR TO THE ONE MADE BY HERTZ IT COULD PRODUCE RADIO WAVES OF VERY SHORT WAVELENGTHS WHICH NO OTHER APPARATUS COULD ATHERTU DO



QUANTITATIVE EXPERIMENTS ON THE PROPERTIES OF THESE WAVES WERE NOW POSSIBLE FOR THE FIRST TIME.

THESE ELECTROMAGNETIC WAVES BELONG TO THE SAME GROUP OF ENERGY WAVES TO WHICH LIGHT BELONGS

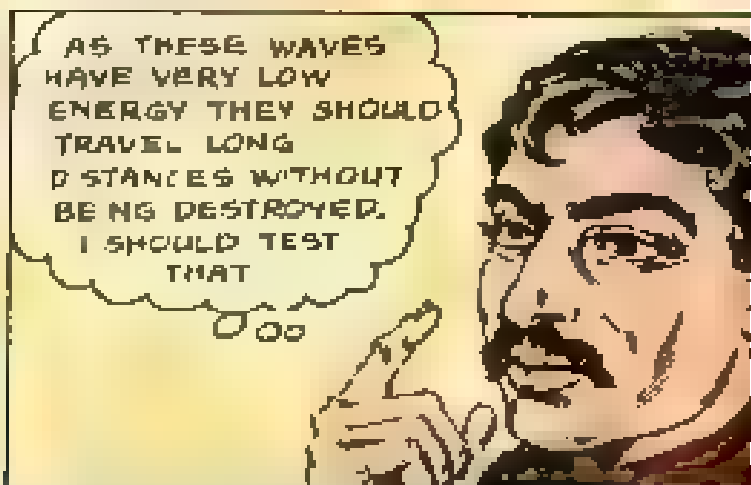


SO, LIKE LIGHT WAVES, IT MUST BE POSSIBLE TO POLARIZE RADIO WAVES 'OO!



AND THUS BOSE DISCOVERED THE CRYSTAL NEMATITE WHICH COULD POLARIZE RADIO WAVES.

AS THESE WAVES HAVE VERY LOW ENERGY THEY SHOULD TRAVEL LONG DISTANCES WITHOUT BEING DESTROYED. I SHOULD TEST THAT



HIS EXPERIMENTS ON THIS TOO GAVE HIM POSITIVE RESULTS

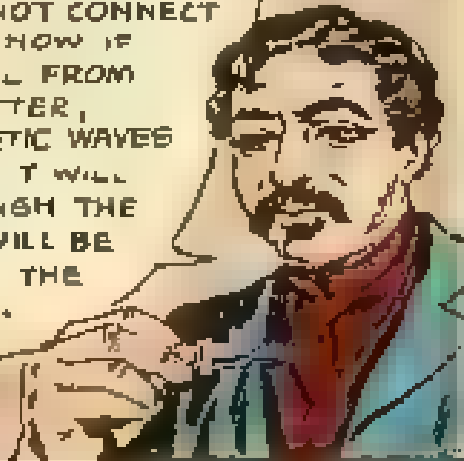
IN 1895 HE GAVE A PUBLIC DEMONSTRATION OF HIS DISCOVERIES IN CALCUTTA

GENTLEMEN, I HAVE SHOWN YOU THE TRANSMITTER PLACED IN THE OTHER ROOM, 75 FEET AWAY FROM US



• ABOUT 23 METRES

THIS IS THE COHERER*
YOU CAN SEE THAT THE
COHERER AND THE TRANS-
MITTER ARE NOT CONNECT-
ED BY WIRES. NOW IF
I GIVE A SIGNAL FROM
THE TRANSMITTER,
ELECTROMAGNETIC WAVES
PRODUCED BY T WILL
TRAVEL THROUGH THE
WALLS AND WILL BE
PICKED UP BY THE
COHERER..



AND THIS
BELL WILL
RING HERE.



AS SOON AS BOSE WENT TO THE
OTHER ROOM AND GAVE THE SIGNAL —



THE AUDIENCE WAS ASTOUNDED.

IT IS POSSIBLE TO BEND
SIGNALS WITHOUT THE AID
OF WIRES! IT'S ALMOST
LIKE MAGIC..



BOSE WORKED LONG HOURS IN THE LABORATORY AND YET FOUND TIME TO HELP HIS WIFE IN THE KITCHEN.

THERE, ABALA! ALL YOUR JARS NEATLY LABELLED AND ARRANGED!

YOU JUST HAVE TO LOOK AT THE LABEL AND YOU GET WHAT YOU WANT.

BOSE STARTED WORK ON A PROJECT TO LINK HIS COLLEGE, A KILOMETRE AWAY, WITH HIS HOME BY RADIO. BUT A LETTER FROM THE ROYAL SOCIETY MADE HIM LEAVE HALFWAY.

ABALA, THE ROYAL SOCIETY IS PUBLISHING MY PAPERS

THAT'S GREAT NEWS! BUT I'M NOT SURPRISED

I WISH I COULD MAKE A TRIP TO EUROPE AND OBSERVE THE WORK GOING ON THERE IN MY FIELD.

PERHAPS YOU COULD APPLY FOR SOME LEAVE AND PLAN A TRIP

1. AS A RESULT OF THE BRITISH BOARD OF WORKS AND MINISTERS MEETING TO WORK AT THEIR LONDON SESSION

ABALA, I HAVE BEEN SANCTIONED SPECIAL LEAVE TO ATTEND THE SESSION. WE GO NEXT WEEK



2. HIS LIAISON AT LONDON EARNED HIM THE ADMIRATION AND ESTEEM OF THE PROMINENT SCIENTISTS FROM ALL OVER EUROPE WHO HAD ASSEMBLED THERE



3. LORD KELVIN WAS SO IMPRESSED THAT HE LIMPED INTO THE LAUREL GALLERY TO CONGRATULATE ABALA

(CONGRATULATIONS, MRS BOSE YOUR HUSBAND IS A GENIUS HE HAS MADE A GREAT STRIDE IN THE REALM OF PHYSICS)



THEY WERE VERY IMPRESSED BY HIS WORK AND ADMIRATION THE GOVERNMENT AS A SPECIAL GESTURE GRANTED HIM LEAVE TO ATTEND THE MEETING



MANY PROMINENT INDIANS SAW A KINDRED SPIRIT IN HIM AND CAME TO HIS AID. TAGORE WAS ONE OF THEM



BOSE SPENT ALL HIS TIME ON HIS RESEARCH ON ELECTROMAGNETIC WAVES. ONE DAY -

ON THE SAME MORNING, THE RECEIVER HAS LOST ITS SENSITIVITY NOW I WILL HAVE TO WAIT UNTIL MORNING TO CONTINUE THIS EXPERIMENT

THE NEXT DAY -

GOOD NOW THE RESPONSE IS FINE. AFTER A NIGHT'S REST, ITS SENSITIVITY GOES DOWN AS IF IT WERE TIRE. AFTER ENOUGH REST IT REGAINS ITS EFFICIENCY

IS IT POSSIBLE THAT LIKE LIVING BEINGS METALS ALSO HAVE FATIGUE? SOUNDS IMPOSSIBLE BUT THAT IS WHAT HAPPENS HERE BECAUSE, INDIAN PHILOSOPHY DOESN'T RULE OUT SUCH A POSSIBILITY

BOSE WAS THUS DRAWN INTO AN ALTOGETHER NEW FATHORIZATION AND HE CAME UP WITH SOME STARTLING CONCLUSIONS

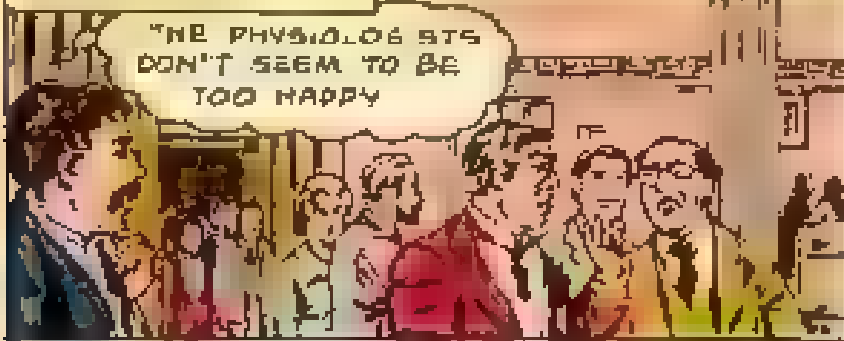
HOW STRANGE HOW COULD WE SEPARATE THE LIVING AND NON-LIVING MERELY ON THE BASIS OF RESPONSE...

IN 1900 THE GOVERNMENT SENT BOSE TO ATTEND THE INTERNATIONAL CONFERENCE OF PHYSICISTS AT PARIS. THERE HE PRESENTED HIS NEW FINDINGS ON THE RESPONSE IN THE LIVING AND NON-LIVING

...THE LINES OF DEMARCATION BETWEEN THE LIVING AND THE NON-LIVING ARE QUITE ARBITRARY

REMARKABLE! ONLY A SCIENTIST COULD HAVE COME UP WITH IT. THIS DISCOVERY IS GOING TO REVOLUTIONIZE SCIENTIFIC THINKING ITSELF

FROM PARIS BOSE WENT TO ENGLAND WHERE HE READ A SIMILAR PAPER BEFORE THE BRITISH ASSOCIATION. HERE TOO IT WAS WELL RECEIVED BUT —



"THE PHYSIOLOGISTS DON'T SEEM TO BE TOO HAPPY"

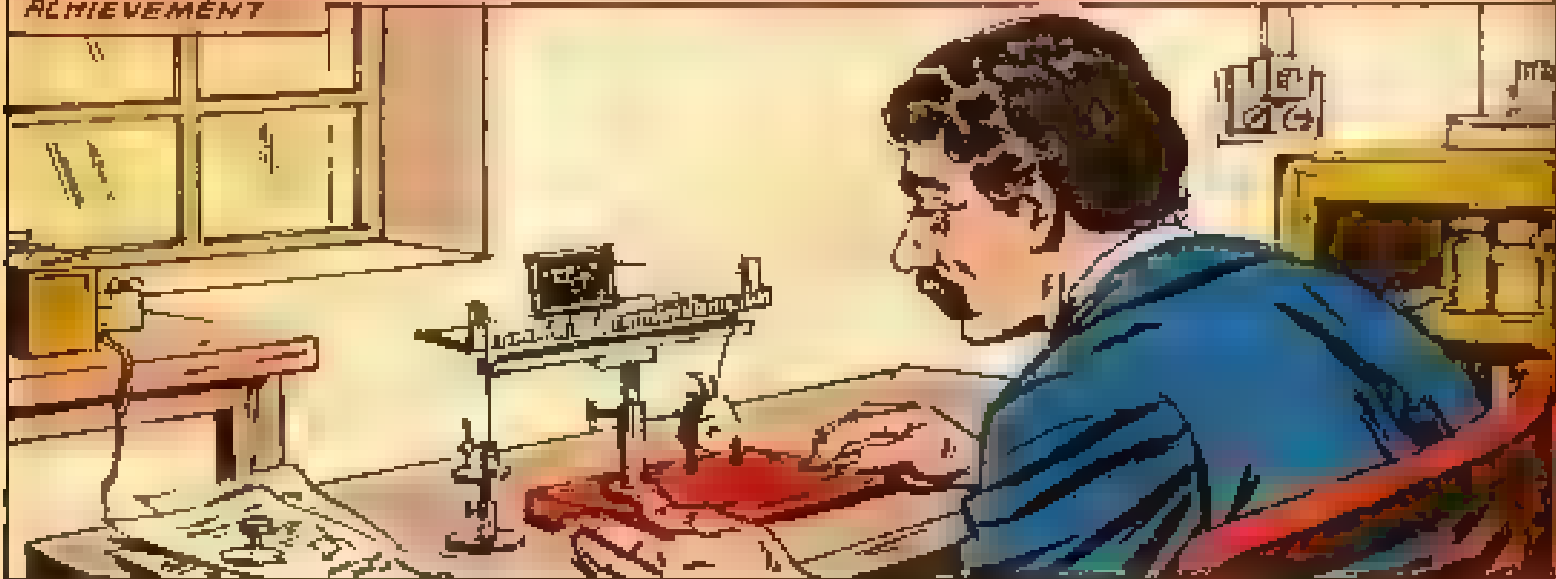
THE PHYSIOLOGISTS WERE NOT. THEY COULD NOT ACCEPT BOSE'S METHOD OF EXPERIMENTATION AS SUCH METHODS WERE NOT RECOGNISED BY THEM

AT THE INVITATION OF LORD RALEIGH HE STAYED BACK IN LONDON TO DEVISE NEW TECHNIQUES.

I MUST PERFECT AN INSTRUMENT TO RECORD MINUTE RESPONSES THAT SHOULD BE MY FIRST JOB

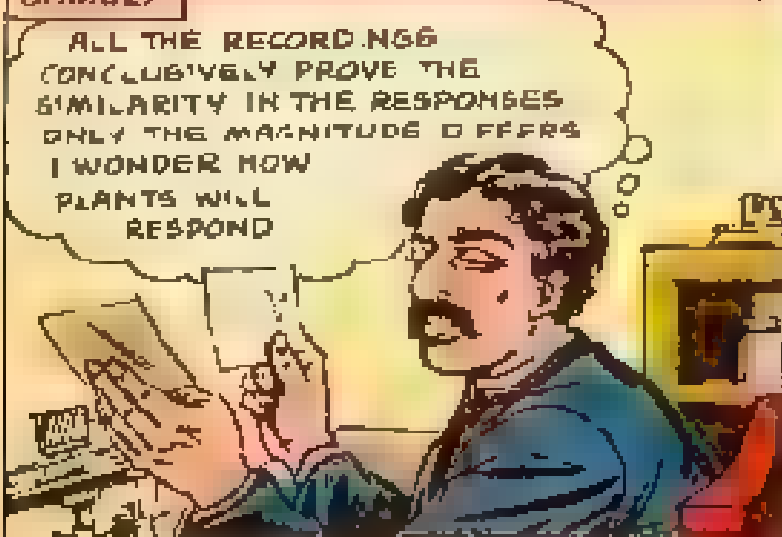


WHAT HE EVENTUALLY DESIGNED FOR THIS PURPOSE WAS THE CRESCOGRAPH WHICH COULD AMPLIFY ANY TINY SIGNAL TO MILLION TIMES. IT WAS A MAGNIFICENT ACHIEVEMENT



BOSE RECORDED THE RESPONSES OF ANIMALS AND METALS TO DIFFERENT STIMULI

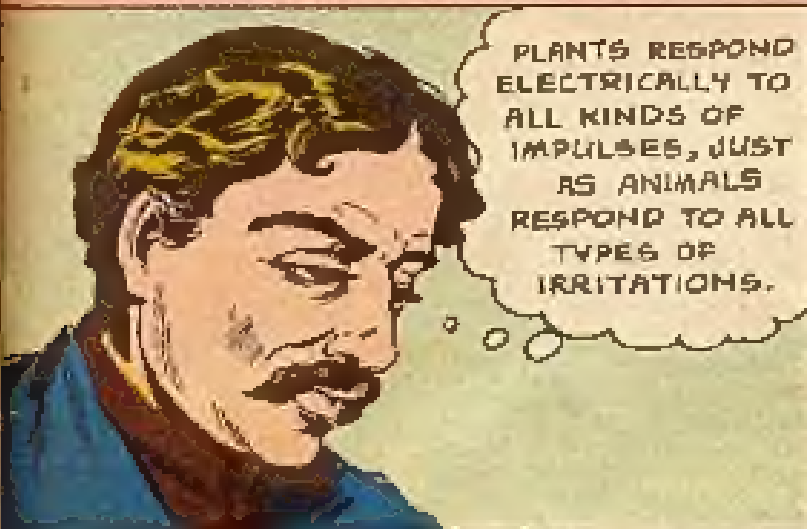
ALL THE RECORDINGS CONCLUSIVELY PROVE THE SIMILARITY IN THE RESPONSES. ONLY THE MAGNITUDE DIFFERS. I WONDER HOW PLANTS WILL RESPOND



HE RUSHED TO THE GARDEN AND COLLECTED SOME LEAVES



ON TESTING THEM HE WAS ASTOUNDED.



ACCEPTANCE TO HIS REVOLUTIONARY IDEAS HOWEVER WAS SLOW TO COME.

ORDINARY PLANTS RESPONDING TO ELECTRIC STIMULI LIKE ANIMAL TISSUES. IMPOSSIBLE!



BUT BOSE DIDN'T GIVE UP. HIS PAINSTAKING WORK AND METICULOUSLY PLANNED EXPERIMENTS SLOWLY WON HIM RECOGNITION.

IN 1902 HE CONDUCTED A NUMBER OF EXPERIMENTS BEFORE THE LINNEAN SOCIETY GATHERING CONSISTING OF MOST OF HIS CRITICS. WHEN BOSE FINISHED HIS LECTURE —



BOSE'S PIONEERING WORK HAD OPENED UP A NEW BRANCH IN NATURAL SCIENCE — BIOPHYSICS. STUDYING BIOLOGICAL PHENOMENA WITH THE METHODOLOGY OF PHYSICS, WITH ITS ACCURACY AND PRECISION, YIELDED A GREAT DEAL OF NEW INFORMATION ON THE MYSTERIES OF LIFE.

BOSE RETURNED TO INDIA IN TRIUMPH IN OCTOBER 1902. THE ROYAL SOCIETY HAD FINALLY PUBLISHED HIS PAPERS AND HIS DISCOVERIES HAD BEEN ACCEPTED ALL OVER THE WORLD.



* LONDON UNIVERSITY HAD AWARDED HIM A DOCTORATE IN RECOGNITION OF HIS OUTSTANDING CONTRIBUTION.

BOSE RESUMED HIS DUTY AT PRESIDENCY COLLEGE. FOR ALL HIS SUCCESS AND FAME, HE STILL HAD TO STRUGGLE WITH AN ILL-EQUIPPED LABORATORY.



ONE CAN'T EXPECT THE GOVERNMENT TO SET UP A DECENT LAB IN THE COUNTRY, ABALA.



A RESEARCH INSTITUTE, IF IT IS TO COME UP IN THE COUNTRY WILL HAVE TO BE BUILT BY OURSELVES.

THEN LET'S START SAVING EVERY PENNY WE CAN TOWARDS THIS GOAL FROM TODAY

BOSE NOW DEVOTED ALL HIS TIME TO THE STUDY OF PLANTS. HIS DEVOTION TO HIS WORK WAS SO TOTAL THAT PEOPLE BELIEVED HE COULD EVEN CONVERSE WITH PLANTS.



HUSH! PROF. BOSE IS TALKING TO THE PLANTS. HE'LL BE ANGRY IF HE'S DISTURBED.



IN THE MATTER OF A FEW YEARS HE FOUND OUT MORE ABOUT PLANTS THAN ANYONE BEFORE AND PERHAPS SINCE.

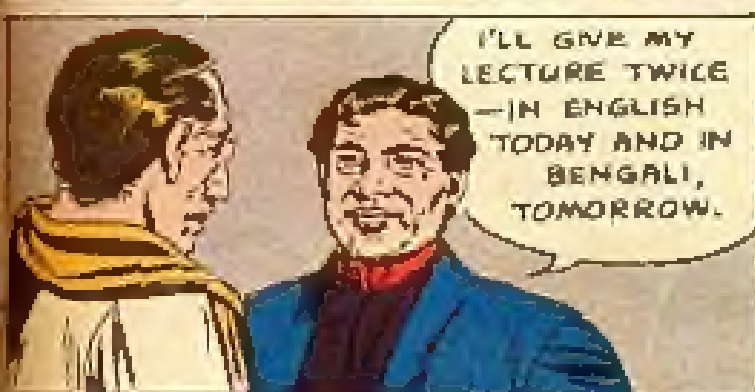


HE PUBLISHED HIS DISCOVERIES OF THIS PERIOD IN TWO OF THE MANY BOOKS HE WROTE.

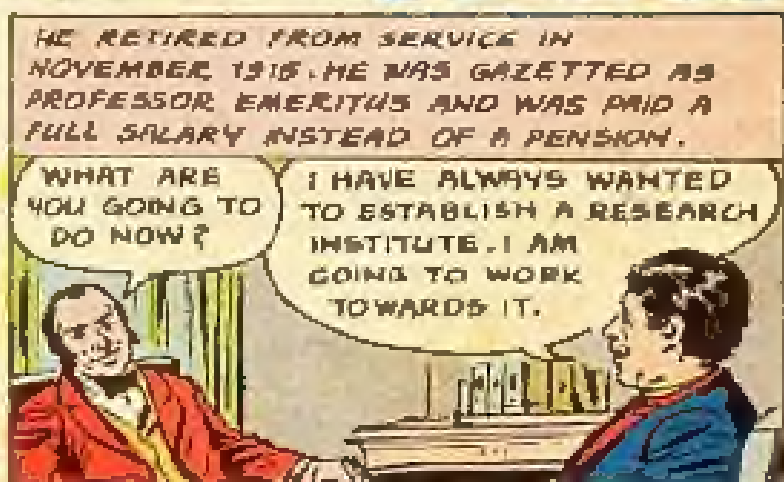


THESE BOOKS CREATED GREAT INTEREST ABROAD AND HIS METHODS AND INSTRUMENTS BEGAN TO BE USED IN UNIVERSITIES ALL OVER THE WORLD.

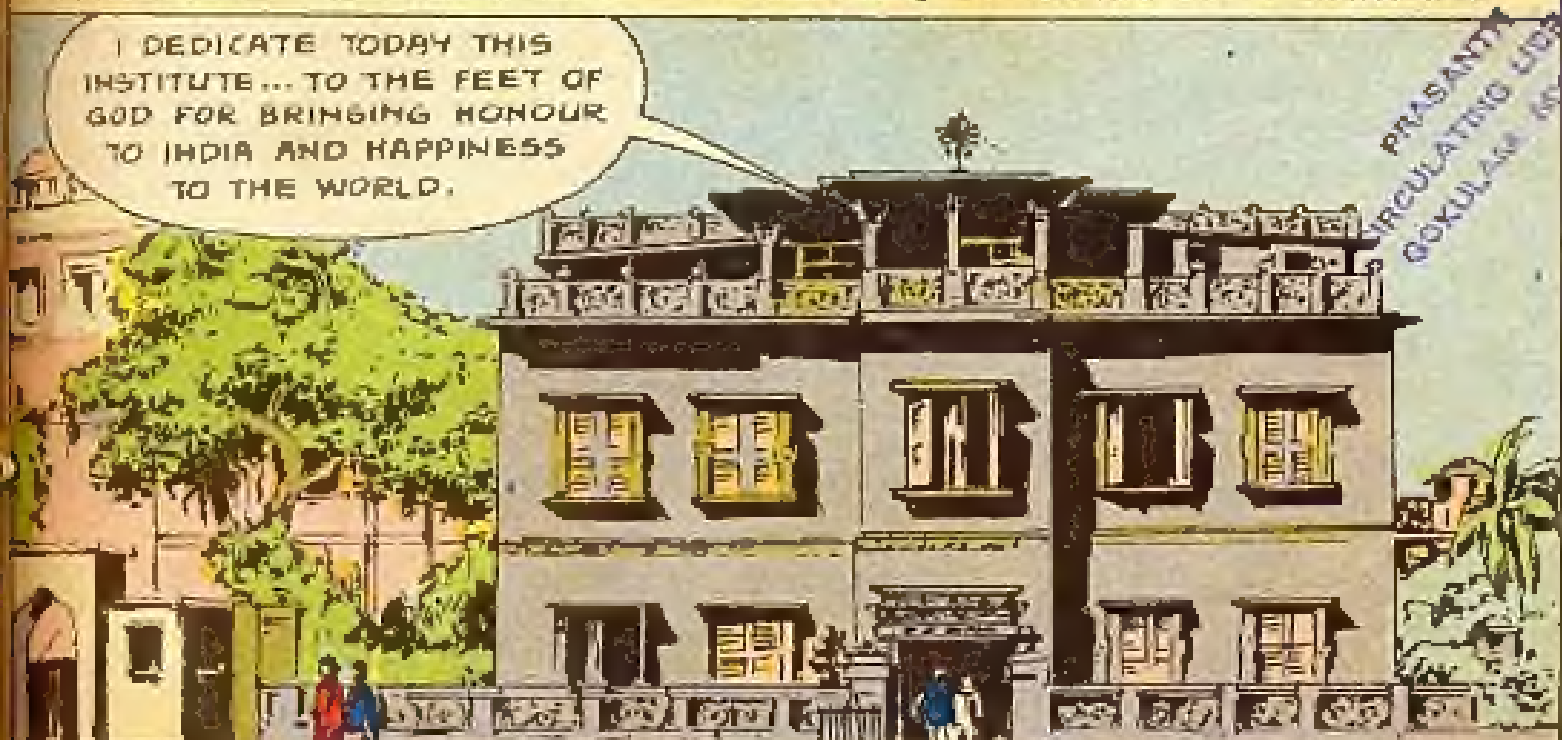
DESPITE HIS BUSY SCHEDULE HE FOUND TIME TO GO ON LECTURE TOURS ALL OVER THE COUNTRY. ONLY AT MYMENSINGH THE CROWD THAT CAME TO HEAR HIM WAS MORE THAN THE HALL COULD CONTAIN.



BOSE NEVER TRIED TO CAPITALISE ON HIS FAME OR HIS INVENTIONS.



THE INSTITUTE WAS OPENED ON 30 TH NOVEMBER, 1917 ON HIS 53 TH BIRTHDAY.



PRASANTA
CIRCULATING LIBRARY
GOKULAS 69508



AS THE FOUNDER-DIRECTOR, BOSE WORKED AT THE BOSE RESEARCH INSTITUTE FOR THE REST OF HIS LIFE, GUIDING YOUNGSTERS IN RESEARCH.

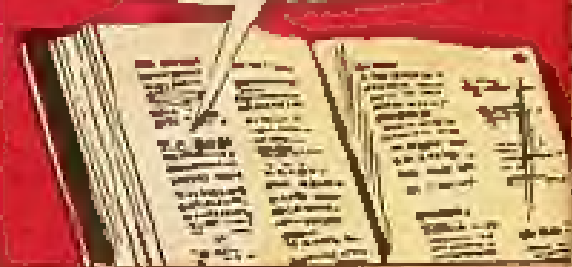
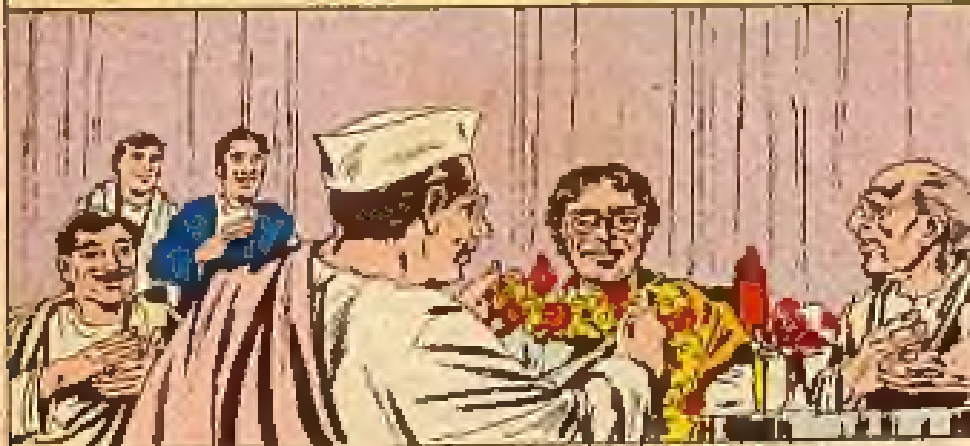
HE PERFECTED A METHOD OF TRANSPLANTING FULL-GROWN TREES, BY SEDATING THEM.



ALL SORTS OF HONOURS CAME HIS WAY NOW. HE WAS KNIGHTED IN 1917. THREE YEARS LATER, HE WAS ELECTED A FELLOW OF THE ROYAL SOCIETY. AND IN 1931 THE CITIZENS OF CALCUTTA HONoured HIM AT A CIVIC RECEPTION. SUBHAS CHANDRA BOSE, THE THEN MAYOR OF CALCUTTA, HONoured THE SCIENTIST ON BEHALF OF THE CITIZENS.

THIS OUTSTANDING SCIENTIST DIED ON NOVEMBER 23, 1937. WHAT ENCYCLOPAEDIA BRITANNICA WROTE IN 1945 ABOUT HIM IS STILL VALID.

HIS WORK WAS SO MUCH IN ADVANCE OF HIS TIME THAT ITS PRECISE EVALUATION WAS NOT POSSIBLE.



IT DOES NOT SEEM POSSIBLE EVEN TODAY.